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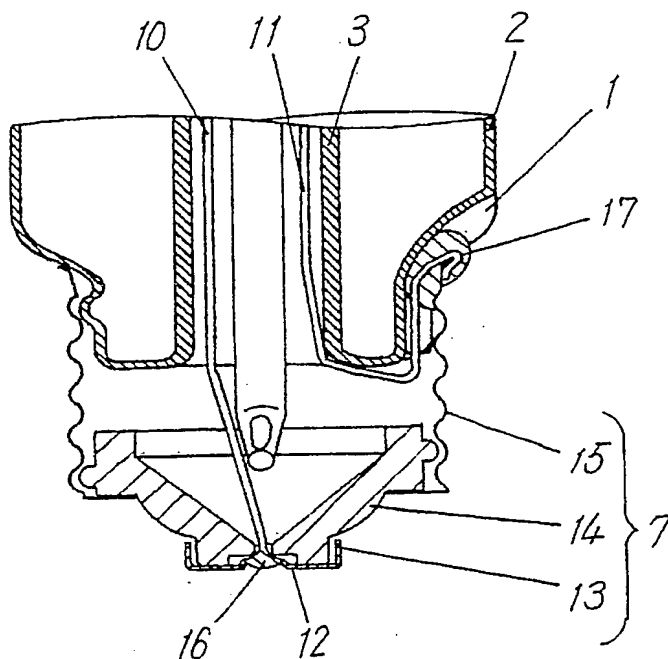
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[続葉有]

(54) Title: LAMP

(54) 発明の名称: ランプ



(57) Abstract: A lamp comprising a glass bulb (2) formed with a recess (1), a base (7) fixed so as to cover at least part of the recess (1), a power-supplying lead wire (11) positioned at the tip end thereof in the recess (1), and lead-free solder (17) poured into the recess (1) to allow the base (7) to electrically connect with the lead wire (11), wherein the lead-free solder (17) consists of mainly Sn and the remaining compositions of at least 5-40 mass% of Sb and 0-10 mass% of Cu, and has a solidus line temperature of at least 235°C.

(57) 要約: 本発明に係るランプは、凹部 1 が形成されているガラスバルブ 2 と、前記凹部 1 の少なくとも一部を覆うように固着された口金 7 と、前記凹部 1 に先端が位置する電力供給用のリード線 11 と、前記凹部 1 に流し込まれ、前記口金 7 とリード線 11 とを電氣的に接続させる鉛フリーはんだ 17 とを備え、前記鉛フリーはんだ 17 は、

Sn を主成分とし、残部の組成として少なくとも Sb が 5 質量%~40 質量%、かつ Cu が 0 質量%~10 質量%であり、固相線温度が 235℃ 以上である。

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添付公開書類:

— 国際調査報告書

2文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013474

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> H01J5/50, H01K1/46, B23K35/26, B23K1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> H01J5/50, H01K1/46, B23K35/26, B23K1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Jitsuyo Shinan Toroku Koho	1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2002-245974 A (Matsushita Electric Industrial Co., Ltd.), 30 August, 2002 (30.08.02), Claim 1; all drawings (Family: none)	1-5
Y	JP 51-85286 A (Hitachi, Ltd.), 26 July, 1976 (26.07.76), Full text; all drawings (Family: none)	2
Y	JP 2-34295 A (J.W. Harris Co. Inc.), 05 February, 1990 (05.02.90), Claims 4 to 7; examples D, E, F, G; all drawings & US 4758407 A	1-4

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  
07 December, 2004 (07.12.04)

Date of mailing of the international search report  
28 December, 2004 (28.12.04)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013474

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2002-321084 A (Sumitomo Metal Mining Co., Ltd.), 05 November, 2002 (05.11.02), Claim 1; Par. No. [0014]; all drawings (Family: none)	1-5
A	JP 2002-239781 A (Ishikawa Kinzoku Kabushiki Kaisha), 28 August, 2002 (28.08.02), Full text; all drawings (Family: none)	1-5
A	JP 2002-1575 A (Matsushita Electric Industrial Co., Ltd.), 08 January, 2002 (08.01.02), Full text; all drawings (Family: none)	1-5
A	JP 11-151591 A (TDK Corp.), 08 June, 1999 (08.06.99), Claim 1; Fig. 1 (Family: none)	1-5
A	JP 3-255637 A (Toshiba Corp.), 14 November, 1991 (14.11.91), Claim 1; all drawings (Family: none)	1-5
A	JP 54-129770 A (Tokyo Shibaura Electric Co., Ltd.), 08 October, 1979 (08.10.79), Full text; all drawings (Family: none)	1-5

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013474

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The special technical feature in claims 1, 3-5 is a lamp using lead-free solder having specified compositions, and the special technical feature in claim 2 is a lamp having a recess-formed bulb and using lead-free solder having specified compositions, these special technical features being different from each other.

These groups of inventions are not considered to be so linked as to form a single general inventive concept, because there is no technical relationship among those inventions involving one or more of the same or corresponding technical features.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.